REMARKS

Claims 37 and 39-44 stand rejected under 35 U.S.C. § 102 (e) as being anticipated by Lee et al. (U.S. Patent No. 5,985,787) ("Lee"). Reconsideration is respectfully requested.

Applicant's invention is not anticipated by Lee. In fact, Applicant's invention addresses the shortcomings of Lee's structure. Lee is directed toward modulating the temperature of the deposition to achieve only a "tight and smooth surface morphology." (Col. 2, lines 23-26). Lee teaches that the "optimum deposition temperature was 350°C. to 450° C." (Col. 4, lines 10-12). Lee further discloses that depositions from a "normal temperature to 200°C.," formed pin holes and hillocks (Col. 4, lines 40-43). Similarly, "a deposition temperature of 600°C or above," resulted in a structure with pin holes. (Col. 4, lines 45-47). However, Lee is void of any teaching or suggestion that a structure with good step coverage is achieved.

Applicant's invention is directed to providing a smooth, uniform, continuous film of a platinum group metal that also has good step coverage. Applicant's specification discloses that it was difficult to control film deposition rates. For instance, in forming a capacitor 200, the inside walls 240 and the bottom 250 of the capacitor 200 would have poor step coverage since the top layer 210 is deposited quickly. (Page 3, lines 11-26 and Fig. 12).

Prior solutions, such as the one disclosed in Lee, attempted to increase the smoothness of the deposited film by only manipulating the temperature at which the metal is deposited. For instance, increasing the temperature increased the growth rate and resulted in a smoother film; however, the deposition rate also increased which resulted in poor step coverage. Conversely, decreasing the temperature of the process results in an increased carbon content for the film resulting in poor film quality. The "conventional methods were unable to achieve both good step coverage and a smooth continuous film." (Applicant's specification, pg. 4, lines 1-21) (emphasis added).

To address the shortcomings in the prior art, such as found in Lee, Applicant teaches depositing metal films in the presence of both oxygen and nitrous oxide. The presence of nitrous oxide is believed to modulate the growth of the metal film since "nitrous oxide is a weaker oxidizing agent than the oxygen and the combination of these two oxidizing gases modulates the growth of the platinum group metal film while reducing the carbon content in the film." (Applicant's specification, pg. 14, lines 19-29) (emphasis added). Accordingly, Applicant's structure is different as a result of the particular deposition process utilized. Moreover, Applicant's specification provides further proof of the structural differences.

Applicant's Figure 2 illustrates a metal film formed in accordance with the invention (in the presence of oxygen and nitrous oxide); whereas, Applicant's Figure 3 illustrates a metal film formed by conventional methods such as taught in Lee. As illustrated, Figure 3 is not smooth and continuous as the metal film in Figure 2 is; but, is rough and not continuous. Further, the metal film of Figure 3 was formed in the exact temperature range taught by Lee: 400°C. As a result of depositing a metal film in the presence of both oxygen and nitrous oxide, Applicant's structure is clearly different.

Further, claims 37 and 39-44 recite limitations which distinctly claim the product for which protection is sought: a capacitor platinum electrode comprising a platinum group metal formed as a result of a particular deposition process, "in the presence of both oxygen and nitrous oxide" and under predetermined specific temperature, pressure and combined flow rate ranges. Because claims 37 and 39-44 recite structural limitations (which are clearly illustrated in Figure 2) resulting from particular deposition parameters, and which cannot be adequately described in any other manner, claims 37 and 41 are allowable.

Claims 39-40 depend from claim 37 and claims 42-44 depend from claim 41, and are allowable for at least those reasons described above.

Claim 45 stands rejected under 35 U.S.C. § 103(a) as being obvious over Lee. Reconsideration is respectfully requested.

For reasons provided above, claim 45, which depends from claim 41, is similarly allowable along with claim 41, and not rendered obvious by Lee.

Moreover, the Office Action provides no support in its contention that Lee suggests forming a platinum electrode that "has a thickness of about 500 angstroms," as recited in claim 45. In fact, Lee teaches away from this. Lee teaches that "[p]referably, the thickness of the platinum film deposited over the wafer 15 is 80 nm to 120 nm." (Col. 3, lines 47-49). As a result, Lee suggests a platinum film that is from 800 angstroms to 1200 angstroms thick. This is an additional reason that claim 45 is allowable.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

By_____

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